UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,546	10/21/2005	William R. Freeman	00015-017001/SD2001-200-1	3894

26138 7590 04/01/2010

Joseph R. Baker, APC
Gavrilovich, Dodd & Lindsey LLP
4660 La Jolla Village Drive, Suite 750
San Diego, CA 92122

EXAMINER	
HUANG, GIGI GEORGIANA	

ART UNIT	PAPER NUMBER
1612	

MAIL DATE	DELIVERY MODE
04/01/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,546	FREEMAN, WILLIAM R.	
	Examiner	Art Unit	
	GIGI HUANG	1612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,14-37 and 40-42* is/are pending in the application.

4a) Of the above claim(s) *19-23,25-37 and 40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,14-18,24,41 and 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

Status of Application

1. The response filed January 4, 2010 has been received, entered and carefully considered. The response affects the instant application accordingly:

   a. Claims 1, 11-12, 24 have been amended.

2. Claims 1-12, 14-37, 40-42 are pending in the case.

3. Claims 1-12, 14-18, 24, 41-42 are present for examination.

4. The text of those sections of title 35.U.S. Code not included in this action can be found in the prior Office action.

5. All grounds not addressed in the action are withdrawn or moot.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-11, 13-18, and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recited the dose to be “greater than about 50j/cm2”. The term "greater than about" is a relative term that renders the claims indefinite. The term “about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the

invention. The term is unclear as to what the endpoints of the ranges/limitations are for the claim.

See Amgen, Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991), where the court held that claims reciting "at least about" were invalid for indefiniteness where there was close prior art and there was nothing in the specification, prosecution history, or the prior art to provide any indication as to what range of specific activity is covered by the term "about." (See MPEP 2173.05 [R-5] "Relative Terminology".) This ruling would apply equally to "greater than about".

For purposes of prosecution, and amount applies.

7. Claims 1-11, 13-18, and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In addition to the issue of indefiniteness to the term "greater than about" as addressed above, the claims are also indefinite in regards to the phrase "greater than about 50j/cm^2 to 200j/cm^2" as it is unclear as to what the what metes and bounds on the invention, as well as the intended parameters as the phrase recites "greater than" which indicate open range, but then cites a closed endpoint (200j/ cm^2). The phrase is also confusing as it is unclear if it is meant to recite a dose greater than about "50j/cm^2 to 200j/cm^2"? Is it for a closed range? an open one? It does not allow one of skill in the art to ascertain the metes and bounds. For purposes of prosecution, and any amount applies.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-8, 10-11, 13-14, 16-17, 24, 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strong et al. (U.S. Pat. Publication 2003/0087889) in view of Mannivannan et al. (Digital fundus imaging using a scanning laser ophthalmoscope).

Strong et al. teaches a method of selection and treatment of patients with occult choroidal neovascular lesions (CNV) including patients with age-related macular degeneration (AMD) with photodynamic therapy (Abstract). Strong et al. teaches that laser photocoagulation is limited to well-demarcated extrafoveal and juxtafoveal CNV and small well-demarcated subfoveal lesions unlike photodynamic therapy with verteporfin which can selectively destroy the CNV without significant destruction of the overlying tissue and possibly occluding new vessels with the CNV lesion. Strong teaches the method comprising assessment of the lesion (e.g. Example 1-2), determination if the lesion spares the foveal center ("not subfoveal", i.e. extrafoveal, juxtafoveal) or in the avascular zone as CNV can occur anywhere in the fundus (paragraph 147, Example 2), selecting the treatment, and providing photodynamic therapy by administering the photosensitizer (verteporfin), allowing time for the photosensitizer to localize in the lesion, followed by light application at a wavelength of

689nm (verteporfin absorption spectrum, paragraph 8), and follow up angiography is preferred at least every 3 months with repeated photodynamic treatment if new leakage is present. The light sources commonly used for these light wavelengths (e.g. 689nm) are non-thermal lasers (coherent light) and LEDs (light emitting diodes, non-coherent light- paragraph 8).

The lesion size and location are determined prior to treatment with baseline measurements that can be determined by fluorescein angiographic photographs and a fundus camera (e.g. Example 2- paragraph 131-152). The photodynamic therapy can be performed with a number of photoactive compounds including hematoporphyrins, texapyrins, and verteporfin (also known as BPD-MA, absorption spectrum 689nm as addressed above) where the absorption spectrum of the compound is typically between 350nm to 12nm, more preferred 400-900nm, and even more preferred 600-900nm (e.g. paragraph 44-49); were mixture of these compounds can be used for the method depending on the absorption of light preferred. The compounds can be delivered in various forms (e.g. liposomal) and administered in several ways including intravenously, orally, and locally (paragraph 86-90). The fluence for irradiation of the area can vary widely depending on the depth of tissue, type of tissue, fluid in the area, but the preferred range is from about 20-200Joules/cm^2 (paragraph 101), with particular fluences of 50, 75, and 100 J/ cm^2 taught, and 50J/ cm^2 exemplified with verteporfin (Example 3-paragraph 159-161, claimed) and evaluation with fluorescein angiography (paragraph 162) (see full document, specifically Abstract, paragraph 3-4, 7-8, 10-12, 14-24, 27-28, 40, 44-85, 85-96,101-113, 131-152, 159-162, claims).

Strong et al. does not expressly teach the use of a high speed scanning laser ophthalmoscope (SLO). Strong does teach the use of a fundus camera (e.g. Example 2, baseline assessment).

Mannivannan et al. teaches that the typical method of imaging the eye involves photographing the retina with a fundus camera which not only requires the photographs be digitized prior to analysis, but the resulting illumination across the image is not uniform and creates problems in digital image analysis which is not desirable. Mannivannan goes on to teach that a scanning laser ophthalmoscope interfaced to a computer (SLO, also known as high speed scanning laser ophthalmoscope) has a number of significant advantages for digital retinal imaging. Firstly, it operates at much lower light levels and has better uniformity of illumination than the fundus camera. Secondly, it permits imaging at various wavelengths with no consequent degradation in image quality, particularly in regards to the value of imaging at infrared wavelengths which give greater tissue penetration (i.e. a better, clearer, and detailed image result). Lastly, because it has the capability for confocal imaging, tomographic images can be taken, improving the visualization of features and structures deep in the retina.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to utilize scanning laser ophthalmoscope (SLO) instead of fundus camera photography, as suggested by Mannivannan, and produce the instant invention. It would be obvious to one of skill in the art to substitute the fundus camera with the scanning laser ophthalmoscope as it has substantial advantages over the camera to yield better quality, greater image detail, and can produce tomographic

images (sectional images, can divide the image into to sections- it is analogous to seeing specific detail sections of an area on an MRI verses just the general area on an x-ray). One of ordinary skill in the art would have been motivated to do this because these advantageous digital images would allow the physician to have a better visualization of the area to be treated, and have greater precision and better results.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strong et al. (U.S. Pat. Publication 2003/0087889) in view of Mannivannan et al. (Digital fundus imaging using a scanning laser ophthalmoscope), as applied to claims above, further in view of Roach (EyeNet Magazine March 2001).

The teachings of Strong in view of Mannivannan are addressed above.

Strong in view of Mannivannan does not expressly teach indocyanine green as a photoimaging agent.

Roach teaches that new and sophisticated imaging systems are improving the results of feeder vessel treatment in macular degeneration. Essentially, it is easier to treat a blood vessel you can see than one you cannot. Roach teaches that real-time digital imaging systems for high-speed indocyanine green angiography (HSICG) coupled with a scanning laser ophthalmoscope can produce real time imaging where the indocyanine green dye used can be seen moving through the choroidal vessels.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to utilize the high-speed indocyanine green angiography with the scanning laser ophthalmoscope, as suggested by Roach, and produce the instant invention. It would have been obvious to one of skill in the art at the time the

claimed invention was made to utilize the high-speed indocyanine green angiography with the scanning laser ophthalmoscope previously addressed above, as the imaging technique would also be invaluable in photodynamic therapy to allow the physician to produce real time imaging where the dye used can be seen moving through the choroidal vessels and identify the aberrant vessels and improve the accuracy and images available to the practitioner to diagnosis and perform the therapy effectively.

One of ordinary skill in the art would have been motivated to do this because as taught by Roach, the scanning laser ophthalmoscope coupled with the high-speed indocyanine green angiography (HSICG) would operate in real time allowing it to be possible to immediately treat an area as it is identified. The system increases the number of vessels you can see, thereby allowing the practitioner to increase number of vessels to be treated which results in increasingly effective and accurate treatment which is desirable.

10. Claims 1-2, 4-8, 10-11, 13-17, 24, 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levy et al. (U.S. Pat. No. 5798349) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovascularization in the Era of Photodynamic Therapy with Verteporfin) and Roach (EyeNet Magazine March 2001).

Levy et al. teaches a method of photodynamic therapy for unwanted neovasculature in the eye specifically in Age-related macular degeneration. Fundus photography, histological examination, and fluorescein angiography were used to observe and identify the choroidal revascularization. A green porphyrin, BPD-MA (verteporfin), was combined with lipoproteins, and injected intravenously in a leg vein.

The eyes were then irradiated with a laser at 692 nm to treat the areas of choroidal neovascularization. The fluence for the treatment sites in the examples were 50, 75, 100 or 150 joules/cm^2. Subsequent angiography was used to show the closure of the vasculature (Abstract, Col.1, lines 18-48, 55-63, Col. 2, lines 13-32, 39-52, Col. 3, lines 32-40, 45-68, Col. 4, lines 1-64, Col. 6, lines 1-36, Col. 8, lines 26-45, Examples 1-2, Col. 9-10, Example 3 and 4, Col. 11 Table 5). Levy also teaches that laser photocoagulation treatment is also available for the condition and depending on the side effects, scarring, and level of prognosis; strategies such as photodynamic therapy are desirable since there is greater selective closure of the blood vessels.

Levy et al. does not expressly teach the method for treating an aberrant choroidal neovasculature in an extrafoveal area of the eye or use of high speed scanning laser ophthalmoscope.

Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovascularization in the Era of Photodynamic Therapy With Verteporfin) teaches that photodynamic therapy (PDT) with verteporfin is well-known for treating patients with subfoveal choroidal neovascularization (CNV) and should be considered for the therapy of CNV that is not subfoveal in certain situations such as juxtafoveal and extrafoveal CNV. Jampol teaches that there are some situations where the use of PDT with verteporfin would be particularly desirable as thermal lasers produce an absolute scotoma verses PDT with verteporfin which could allow the survival of the retina over the CNV, and that successful PDT with verteporfin could allow for a better result. Jampol teaches that the combination of therapies could be more beneficial than either

alone. Additionally, it may be possible to treat a juxtafoveal or extrafoveal membrane with PDT first and see the results. If the lesion continues to grow, then thermal lasers (e.g. laser photocoagulation) could be considered as a next step if needed. The reverse is also contemplated, whereby treatment with the laser is not successful, PDT with verteporfin would be considered. Jampol also addressed that the PDT outcome for extrafoveal CNV lesions would be better than with subfoveal, and juxtafoveal area would be with an intermediate result (Pages 99-101).

Roach teaches that new and sophisticated imaging systems are improving the results of feeder vessel treatment in macular degeneration. Essentially, it is easier to treat a blood vessel you can see than one you cannot. Roach teaches that real-time digital imaging systems for high-speed indocyanine green angiography (HSICG) coupled with a scanning laser ophthalmoscope can produce real time imaging where the indocyanine green dye used can be seen moving through the choroidal vessels.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to utilize photodynamic therapy for CNV in the extrafoveal area of the eye, as suggested by Jampol et al., to utilize the scanning laser ophthalmoscope with high-speed indocyanine green angiography, as suggested by Roach, and produce the instant invention. It would have been obvious to one of skill in the art to utilize the PDT in the extrafoveal region as CNV lesions in the eye would be expected to have better favorable outcomes even compared to the classic subfoveal and could allow the survival of the retina over the CNV which is desirable. It also would have been obvious to one of skill in the art at the time the claimed invention was made

to utilize the scanning laser ophthalmoscope with high-speed indocyanine green angiography, as the imaging technique would also be invaluable in photodynamic therapy to allow the physician to produce real time imaging where the dye used can be seen moving through the choroidal vessels and identify the aberrant vessels and improve the accuracy and images available to the practitioner to diagnosis and perform the therapy effectively.

One of ordinary skill in the art would have been motivated to do this because as taught by Jampol and Roach, there are some situations where the use of PDT with verteporfin would be particularly desirable as thermal lasers produce an absolute scotoma verses PDT with verteporfin which could allow the survival of the retina over the CNV, and that successful PDT with verteporfin could allow for a better result, such as extrafoveal and juxtafoveal CNV. Additionally, as the scanning laser ophthalmoscope coupled with the high-speed indocyanine green angiography (HSICG) operates in real time, it is possible to immediately treat an area as it is identified. The system increases the number of vessels you can see, thereby allowing the practitioner to increase number of vessels to be treated which results in increasingly effective and accurate treatment which is desirable.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levy et al. (U.S. Pat. No. 5798349) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovasularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied to claims above, and in view of Levy et al. (U.S. Pat. No. 4920143).

The teachings of Levy et al. in view of Jampol et al. and Roach are discussed above.

Levy et al. in view of Jampol et al. and Roach does not expressly teach the topical application of the photosensitizer.

Levy et al. (U.S. Pat. No. 4920143), which is fully incorporated by reference in Levy et al. (U.S. Pat. No. 5798349), teaches that the photosensitizing compounds can be administered for systemic or topical use in formulations well know in the art (Col. 10, lines 65-68, Col. 11, lines 1-33).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to try topical administration, as suggested by Levy, and produce the instant invention. It would have obvious to try topical administration as it would be another method of administration if adequate intravenous lines would not be available such as collapsed veins.

One of ordinary skill in the art would have been motivated to do this because topical administration does not require additional equipment such as IV drips and saline flushes, simplifying the procedure and cost to the practitioner.

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levy et al. (U.S. Pat. No. 5798349) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovasularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied to claims above, and in view of LumaCare (Press release - http://lumacare.com/EMEA/pr3.html).

The teachings of Levy et al. in view of Jampol et al. and Roach are discussed above. Levy also teaches the use of coherent light (lasers) in photodynamic therapy.

Levy et al. in view of Jampol et al. and Roach does not expressly teach the use of non-coherent light.

LumaCare teaches the use, availability, and benefit of the LumaCare LC-122 a non-coherent light source for affordable photodynamic therapy activation. The product is compact, lightweight, portable, safer, easier to use, and more affordable to implement than lasers. It can generate light frequencies from 400-800nm for a wide range of photodynamic therapy (PDT) and requires minimal maintenance.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use non-coherent light, as suggested by LumaCare, and produce the instant invention. As taught by LumaCare, traditional light sources for PDT are lasers that are expensive and most are only able to produce a narrow range of light frequencies. The LumaCare is more affordable with greater range of frequencies for various PDT treatments, portable, requires minimal training of staff, and as a result, very cost effective.

One of ordinary skill in the art would have been motivated to do this because not only is LumaCare affordable, it can be used in multiple treatment rooms increasing the number of patients that can be treated. This decreases the overhead, increases efficiency, and increases productivity of the practitioner thereby providing more income, which is desirable.

13. Claims 1-2, 4-8, 10-11, 13-17, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (Jacksonville Medicine) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovascularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001).

Sullivan teaches the method of treating choroidal neovascularization caused by age-related macular degeneration. The method utilized fluorescein angiograms to determine the presence, location, and extent of the choroidal neovascularization by injection of a dye into a vein and multiple photographs of the retina. Treatment followed with the use of photodynamic therapy utilizing verteporfin coupled with low-density lipoprotein and injected intravenously. A non-thermal laser light was then used to activate the verteporfin at the area of neovascularization. The wavelength used was 689 nm, corresponding to the absorption peak of the verteporfin dye. The result was thrombosis and occlusion of the abnormal vessel (Pages 396-398).

Sullivan et al. does not expressly teach the method for treating an aberrant choroidal neovasculature in an extrafoveal area of the eye or the use of a high speed scanning laser ophthalmoscope.

Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovascularization in the Era of Photodynamic Therapy With Verteporfin) teaches that photodynamic therapy (PDT) with verteporfin is well-known for treating patient with subfoveal choroidal neovascularization (CNV) and should be considered for the therapy of CNV that is not subfoveal in certain situation such as juxtafoveal and extrafoveal CNV. Jampol teaches that there are some situations where the use of PDT with

verteporfin would be particularly desirable as thermal laser produce an absolute scotoma verses PDT with verteporfin which could allow the survival of the retina over the CNV, and that successful PDT with verteporfin could allow for a better result. Jampol teaches that the combination of therapies could be more beneficial than either alone. Additionally, it may be possible to treat a juxtafoveal or extrafoveal membrane with PCT first and see the results. If the lesion continues to grow, then thermal lasers could be considered as a next step if needed. The reverse is also contemplated, whereby treatment with the laser is not successful, then PDT with verteporfin would be considered. Jampol also addressed that the PDT outcome for extrafoveal CNV lesions would be better than with subfoveal, and juxtafoveal area would be with an intermediate result (Pages 99-101).

Roach teaches that new and sophisticated imaging systems are improving the results of feeder vessel treatment in macular degeneration. Essentially, it is easier to treat a blood vessel you can see than one you cannot. Roach teaches that real-time digital imaging systems for high-speed indocyanine green angiography (HSICG) coupled with a scanning laser ophthalmoscope can produce real time imaging where the indocyanine green dye used can be seen moving through the choroidal vessels.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to utilize photodynamic therapy for CNV in the extrafoveal area of the eye, as suggested by Jampol et al., to utilize the scanning laser ophthalmoscope with high-speed indocyanine green angiography, as suggested by Roach, and produce the instant invention. It would have been obvious to one of skill in

the art to utilize the PDT in the extrafoveal region as CNV lesions in the eye would be expected to have better favorable outcomes even compared to the classic subfoveal and could allow the survival of the retina over the CNV which is desirable. It also would have been obvious to one of skill in the art at the time the claimed invention was made to utilize the scanning laser ophthalmoscope with high-speed indocyanine green angiography, as the imaging technique would also be invaluable in photodynamic therapy to allow the physician to produce real time imaging where the dye used can be seen moving through the choroidal vessels and identify the aberrant vessels and improve the accuracy and images available to the practitioner to diagnosis and perform the therapy effectively.

One of ordinary skill in the art would have been motivated to do this because as taught by Jampol and Roach, there are some situations where the use of PDT with verteporfin would be particularly desirable as thermal lasers produce an absolute scotoma verses PDT with verteporfin which could allow the survival of the retina over the CNV, and that successful PDT with verteporfin could allow for a better result, such as extrafoveal and juxtafoveal CNV. Additionally, as the scanning laser ophthalmoscope coupled with the high-speed indocyanine green angiography (HSICG) operates in real time, it is possible to immediately treat an area as it is identified. The system increases the number of vessels you can see, thereby allowing the practitioner to increase number of vessels to be treated which results in increasingly effective and accurate treatment which is desirable.

14. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (Jacksonville Medicine) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovasularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied for claims above, and further in view of Levy et al. (U.S. Pat. No. 4920143).

The teachings of Sullivan, Jampol et al., and Roach are discussed above.

Sullivan in view of Jampol et al. and Roach does not expressly teach the topical application of the photosensitizer.

Levy et al. (U.S. Pat. No. 4920143) teaches that the photosensitizing compounds can be administered in formulations well known in the art for systemic or topical use (Col. 10, lines 65-68, Col. 11, lines 1-33).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to try topical administration, as suggested by Levy, and produce the instant invention. It would have obvious to try topical administration as it would be another method of administration if adequate intravenous lines would not be available such as collapsed veins.

One of ordinary skill in the art would have been motivated to do this because topical administration does not require additional equipment such as IV drips and saline flushes, simplifying the procedure and cost to the practitioner.

15. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (Jacksonville Medicine) in view of Jampol et al. (Treatment of Juxtafoveal and

Extrafoveal Choroidal Neovasularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied for claims above, and in view of LumaCare (http://lumacare.com/EMEA/pr3.html).

The teachings of Sullivan, Jampol et al., and Roach are discussed above.

Sullivan, Jampol et al., and Roach teach the use of coherent light (lasers) in photodynamic therapy.

Sullivan, in view of Jampol et al. and Roach does not expressly teach the use of non-coherent light.

LumaCare teaches the use, availability, and benefit of the LumaCare LC-122 a non-coherent light source for affordable photodynamic therapy activation. The product is compact, lightweight, portable, safer, easier to use, and more affordable to implement than lasers. It can generate light frequencies from 400-800nm for a wide range of photodynamic therapy (PDT) and requires minimal maintenance.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use non-coherent light, as suggested by LumaCare, and produce the instant invention. As taught by LumaCare, traditional light sources for PDT are lasers that are expensive and most are only able to produce a narrow range of light frequencies. The LumaCare is more affordable with greater range of frequencies for various PDT treatments, portable, requires minimal training of staff, and as a result, very cost effective.

One of ordinary skill in the art would have been motivated to do this because not only is LumaCare affordable, it can be used in multiple treatment rooms increasing the

number of patients that can be treated. This decreases the overhead, increases efficiency, and increases productivity of the practitioner thereby providing more income, which is desirable.

16. Claims 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (Jacksonville Medicine) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovascularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied for claims above, and further in view of Miller et al. (U.S. Pat. No. 5707986).

The teachings of Levy et al. in view of Jampol et al. and Roach are discussed above.

Levy et al. in view of Jampol et al. and Roach does not expressly teach the fluence of the photoactivating light.

Miller et al. teaches the use of a green porphyrin, BPD-MA (verteporfin) for treating the choroidal neovascularization and other conditions. The BPD-MA was combined with lipoproteins, and injected intravenously in a leg vein. The eyes were then irradiated with a laser at 692 nm to treat the areas of choroidal neovascularization. Miller teaches that the porphyrin is used within the range of about 0.1 to about 20mg/kg, preferably from about 0.15-2.0mg/kg. Specifically, when the green porphyrin dose is reduced from about 2 to about 1mg/kg, there is a corresponding increase in the fluence required to close the choroidal neovascular tissue, such as from about 50 J/cm^2 to about $100J/cm^2$. The green porphyrin has a maximum absorbance of about 550 to 695nm which is the wavelength used to radiate the porphyrin. The fluence for treatment

can vary depending the tissue, depth, and amount of fluid/blood, but preferably varies from about 50-200 J/cm^2. The examples utilized for the treatment sites, verteporfin irradiated with a wavelength of 692, and fluences of 50, 100, and 150 joules/cm^2 were utilized to effectively close the choroidal neovascularization. Subsequent angiography was used to show the closure of the vasculature (Abstract, Col.3, lines 1-68, Col. 4, lines 1-33, Col. 5, lines 29-55, Col. 7, lines 17-65, Col. 8, lines 55-68, Col.10-12, Example 3 and 4).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to utilize the fluence levels for photodynamic therapy as suggested by Jampol et al., with as suggested by Miller, and produce the instant invention. It would have been obvious to one of skill in the art to use the taught fluence amounts of photoactive light for irradiation of verteporfin effective to close the choroidal neovascularization. It is obvious to use the amounts and ranges taught by Miller for the fluence as the dye (verteporfin) utilized is the same, with photoactive light in the same wavelength ranges taught, and for the same purpose for the same conditions to yield the same result, the closure of the abnormal vasculature.

One of ordinary skill in the art would have been motivated to use known amounts and technique for the same treatment with the taught amounts and ranges known to be effective for closure of the choroidal neovascularization.

Response to Arguments

17. Claims 1-11, 13-18, and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for the term “greater than about 50j/cm2”. The term "greater than about" is a relative term that renders the claims indefinite

Applicant's arguments filed 1/4/2010 have been fully considered but they are not persuasive. Applicant asserts that the Examiner alleges that the term “about is indefinite and asserts that the instant specification provides states for the degree of “about” and a range for the term “about. This is not accurate. The issue of indefiniteness as addressed previously is the term “greater than about” where the phrase “greater than” is in combination with the term “about” wherein it is indefinite as the range encompassed by the claim. This is evident by MPEP 2173.05 [R-5] “Relative Terminology”. See Amgen, Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991), where the court held that claims reciting “at least about” were invalid for indefiniteness where there was close prior art and there was nothing in the specification, prosecution history, or the prior art to provide any indication as to what range of specific activity is covered by the term “about.” (See MPEP 2173.05 [R-5] “Relative Terminology”.) This ruling would apply equally to “greater than about” which is synonymous with the phrase “at least about”. Review of the instant specification does not support Applicant’s assertion that the instant specification provides and states the degree of “about” and a range for the term “about”- there is not such statement or definition delineating the explicit degree or range for the term "about" to allow for definiteness for the phrase "greater than about" as recited by the claims. Applicant’s argument in regards to the

W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ as addressed previously, are not persuasive as the MPEP addresses that in that case, the phrase "exceeding about 10% per second" for the stretch rate of plastic was not indefinite as it can be clearly accessed with a stopwatch. \

This is not the case in the instant claims. The measurement is not measurable with a stopwatch and Applicant's excerpt is not taken in the whole context of the section as the MPEP goes on to state that that the court help that claims reciting "at least about" were invalid for indefiniteness there was there was nothing in the specification, prosecution history or the prior art to the provide a clear specific range of activity covered by the term "about" in Amgen, Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991) which was addressed above. The same issues apply in the instant case. As a result, any amount applied for purposes of prosecution.

Accordingly, the rejection is maintained.

18. In regards to the affidavit submitted by Applicant to demonstrate possession of the invention to at least May 7, 2201. The affidavit and exhibits are appreciated and do support Applicant's possession of Photodynamic therapy enhanced feeder vessel treatment with fluorescein angiography, ICA, and SLO for choroidal neovascularization in age related macular degeneration with both possession and reduction to practice to at least May 7, 2001.

However the claims as written are substantially broader than what is presented by Applicant. The claims are broad as they are drawn to CNV in the eye regardless of

the source condition (e.g. CNV as a result of AMD is not recited), claim 2 recite a number of ocular conditions such as ischemic retinopathy, intraocular neovascularization, age-related macular degeneration, corneal neovascularization, retinal neovascularization, choroidal neovascularization, diabetic macular edema, diabetic retina ischemia, diabetic retinal edema, and proliferative diabetic retinopathy; which is broader than the presented CNV in AMD. Claim 3 only recited AMD and the affidavit showing overcomes Jampol as art for claim 3.

It is suggested that were the limitation of the CMV in AMD as presented in the affidavit and exhibit be in the independent claims, to overcome Jampol as prior art in the remaining claims. Currently Jampol is overcome as art for claim 3.

19. Claims 1-8, 10-11, 14-17, 24, 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levy et al. (U.S. Pat. No. 5798349) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovascularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001).

As addressed above Jampol is overcome as art for claim 3, the rejection is moot.

Applicant's arguments filed 1/4/2010 have been fully considered but they are not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

Accordingly, the rejection is maintained.

20. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levy et al. (U.S. Pat. No. 5798349) in view of Jampol et al. (Treatment of Juxtafoveal and

Extrafoveal Choroidal Neovasularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied to claims 1-8, 10-11, 13-17, 24, 41-42 above, and in view of Levy et al. (U.S. Pat. No. 4920143).

Applicant's arguments filed 1/4/2010 have been fully considered but they are not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

Accordingly, the rejection is maintained.

21. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levy et al. (U.S. Pat. No. 5798349) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovasularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied to claims 1-8, 10-11, 13-17, 24, 41-42 above, and in view of LumaCare (Press release - http://lumacare.com/EMEA/pr3.html).

Applicant's arguments filed 1/4/2010 have been fully considered but they are not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

Accordingly, the rejection is maintained.

22. Claims 1-8, 10-11, 13-17, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (Jacksonville Medicine) in view of Jampol et al. (Treatment

of Juxtafoveal and Extrafoveal Choroidal Neovascularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001).

As addressed above Jampol is overcome as art for claim 3, the rejection is moot.

Applicant's arguments filed 1/4/2010 have been fully considered but they are not persuasive. Applicant asserts that Sullivan does not teach the fluence dose of 50J/cm2 which is not persuasive as it is not commensurate in scope with the claims as written and are subject to the indefiniteness rejection for amounts as address in the office action wherein any amount applies. As for Applicant's argument that Sullivan teaches away from higher doses as Sullivan addresses the limitations of laser photocoagulation verses the benefits of photodynamic therapy, this is not persuasive as two technologies (laser photocoagulation and photodynamic therapy) do not utilize the same types of energy (e.g. laser photocoagulation-thermal laser e.g. argon blue green; verses PDT-non-thermal laser or LED) wherein the argument doesn't relate to the appropriate technology much less teach away. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

Accordingly, the rejection is maintained.

23. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (Jacksonville Medicine) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovasularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied for claims 1-8, 10-11, 13-17, 24, and further in view of Levy et al. (U.S. Pat. No. 4920143).

Applicant's arguments filed 1/4/2010 have been fully considered but they are not persuasive. The issues for Sullivan, Jampol, and Roach are addressed above. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

Accordingly, the rejection is maintained.

24. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (Jacksonville Medicine) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovasularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied for claims 1-8, 10-11, 13-17, 24 above, and in view of LumaCare (http://lumacare.com/EMEA/pr3.html).

Applicant's arguments filed 1/4/2010 have been fully considered but they are not persuasive. The issues for Sullivan, Jampol, and Roach are addressed above. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

Accordingly, the rejection is maintained.

25. Claims 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan (Jacksonville Medicine) in view of Jampol et al. (Treatment of Juxtafoveal and Extrafoveal Choroidal Neovascularization in the Era of Photodynamic Therapy With Verteporfin) and Roach (EyeNet Magazine March 2001) as applied for claims 1-8, 10-11, 13-17, 24, and further in view of Miller et al. (U.S. Pat. No. 5707986).

Applicant's arguments filed 1/4/2010 have been fully considered but they are not persuasive. The issues for Sullivan, Jampol, and Roach are addressed above. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

Accordingly, the rejection is maintained.

Conclusion

26. Claims 1-12, 14-18, 24, 41-42 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GIGI HUANG whose telephone number is (571)272-9073. The examiner can normally be reached on Monday-Thursday 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fredrick Krass can be reached on 571-272-0580. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GH
/Zohreh A Fay/
Primary Examiner, Art Unit 1612